

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Previously Presented): An examination assistant device for use in examining an examination objective portion of a quartz product of a semiconductor processing apparatus by holding a process solution including an etching solution in contact with the examination objective portion and then analyzing the process solution to identify a metal impurity contained in the examination objective portion, the quartz product being a pole member having a plurality of grooves for supporting target substrates to be processed in the semiconductor processing apparatus, and the pole member including a pair of concave portions disposed one on either side of the examination objective portion, the device comprising:

a pair of end plates configured to engage with the pair of concave portions;  
a frame connecting the pair of end plates; and  
a solution receiver disposed between the pair of end plates, the solution receiver having dimensions for storing the process solution in a predetermined amount to hold the process solution in contact with the examination objective portion to etch the examination objective portion.

Claim 2 (Original): The device according to claim 1, further comprising a pair of latches to attach the device to the pole member, such that the pole member is pinched between the pair of latches and the pair of end plates.

Claim 3 (Original): The device according to claim 2, wherein each of the latches is pivotally supported on the frame and rotatable between a position to attach the device to the pole member and a position to detach the device from the pole member.

Claim 4 (Original): The device according to claim 1, wherein the device is attached to the pole member by close-contact engagement of the pair of end plates with the pair of concave portions.

Claim 5 (Previously Presented): The device according to claim 1, wherein the pair of concave portions are two of the grooves.

Claim 6 (Original): The device according to claim 5, further comprising, in addition to the pair of end plates, a plurality of engaging plates to be inserted into the grooves, wherein the device is attached to the pole member by close-contact engagement of the pair of end plates and the engaging plates with the grooves.

Claim 7 (Original): The device according to claim 1, wherein the solution receiver is defined by a space in a container formed by the pair of end plates and the frame.

Claim 8 (Original): The device according to claim 7, wherein the pair of end plates and the frame consist essentially of fluoroplastic.

Claim 9 (Previously Presented): An examination assistant device for use in examining an examination objective portion of a quartz product of a semiconductor processing apparatus by holding a process solution including an etching solution in contact with the examination objective portion and then analyzing the process solution to identify a metal impurity contained in the examination objective portion, the quartz product being a

quartz reaction tube including a curved surface on which the examination objective portion is positioned, the device comprising:

an annular member having a bottom surface to come into close contact with the curved surface, and configured to cooperate with the curved surface to form a solution receiver that surrounds the examination objective portion; and

an elastic seal member disposed on the bottom surface of the annular member, the annular member having dimensions for forming the solution receiver to store the process solution in a predetermined amount to hold the process solution in contact with the examination objective portion and to etch the examination objective portion.

Claim 10 (Original): The device according to claim 9, wherein the annular member consists essentially of fluoroplastic.

Claim 11 (Cancelled).

Claim 12 (Original): The device according to claim 9, wherein the annular member further comprising a magnet embedded therein.

Claim 13 (Previously Presented): An examination method for examining an examination objective portion of a quartz product of a semiconductor processing apparatus by use of a process solution including an etching solution, the quartz product being a pole member having a plurality of grooves for supporting target substrates to be processed in the semiconductor processing apparatus, and the pole member including a pair of concave portions disposed one on either side of the examination objective portion, the method comprising:

preparing an examination assistant device that comprises a pair of end plates configured to engage with the pair of concave portions, a frame connecting the pair of end plates, and a solution receiver disposed between the pair of end plates, such that the solution receiver has dimensions for storing the process solution in a certain amount to hold the process solution in contact with the examination objective portion and to etch the examination objective portion,

placing the examination assistant device on the pole member such that the pair of end plates engages with the pair of concave portions and the examination objective portion is positioned within the solution receiver;

causing the process solution within the solution receiver to be in contact with the examination objective portion for a predetermined time, thereby performing etching on the examination objective portion; and

operating an analyzer to analyze the process solution used for the etching to identify a metal impurity contained in the examination objective portion.

Claim 14 (Previously Presented): The method according to claim 13, wherein said identifying the metal impurity contained in the examination objective portion comprises:

evaporating and drying the process solution used for the etching to precipitate quartz and the metal impurity to form a precipitated product;

dissolving the precipitated product into a secondary process solution comprising an etching solution and set to be in an amount smaller than that of the process solution; and

operating the analyzer to analyze the secondary process solution containing the precipitated product dissolved therein.

Claim 15 (Original): The method according to claim 13, wherein said identifying the metal impurity contained in the examination objective portion comprises:

condensing the process solution used for the etching to form a condensed solution;  
and  
operating the analyzer to analyze the condensed solution.

Claim 16 (Original): The method according to claim 13, wherein said identifying the metal impurity contained in the examination objective portion is performed by an inductively coupled plasma mass analyzer.

Claim 17 (Original): The method according to claim 13, wherein the predetermined time for performing the etching on the examination objective portion is determined to correspond to a target etching depth, with reference to a relationship prepared in advance between process time and quartz etching amount in etching quartz by the etching solution.

Claim 18 (Original): The method according to claim 13, wherein said identifying the metal impurity contained in the examination objective portion comprises:

analyzing the process solution used for the etching to detect an amount of quartz and an amount of the metal impurity; and  
using the amount of quartz and the amount of the metal impurity to estimate a concentration of the metal impurity in the examination objective portion.

Claims 19-20 (Cancelled).

Claim 21 (Currently Amended): An examination method for examining an examination objective portion of a quartz product of a semiconductor processing apparatus by use of a process solution including an etching solution,

the quartz product being a quartz reaction tube of the semiconductor processing apparatus, and the quartz reaction tube including a curved surface on which the examination objective portion is positioned, the method comprising:

preparing an examination assistant device that comprises an annular member having a bottom surface to come into close contact with the curved surface, and configured to cooperate with the curved surface to form a solution receiver that surrounds the examination objective portion, and an elastic seal member disposed on the bottom surface, such that the annular member has dimensions for forming the solution receiver to store the process solution in a certain amount to hold the process solution in contact with the examination objective portion and to etch the examination objective portion;

placing the examination assistant device on the curved surface of the quartz reaction tube and forming the [[a]] solution receiver such that the examination objective portion is positioned within the solution receiver;

causing the process solution within the solution receiver to be in contact with the examination objective portion for a predetermined time to perform etching on the examination objective portion; and

operating an analyzer to analyze the process solution used for the etching, to identify a metal impurity contained in the examination objective portion.

Claim 22 (Previously Presented): The method according to claim 21, wherein said identifying the metal impurity contained in the examination objective portion comprises:

evaporating and drying the process solution used for the etching to precipitate quartz and the metal impurity to form a precipitated product;

dissolving the precipitated product into a secondary process solution comprising an etching solution and set to be in an amount smaller than that of the process solution; and

operating the analyzer to analyze the secondary process solution containing the precipitated product dissolved therein.

Claim 23 (Original): The method according to claim 21, wherein said identifying the metal impurity contained in the examination objective portion comprises:

condensing the process solution used for the etching to form a condensed solution;

and

operating the analyzer to analyze the condensed solution.